

**Abstract ID :** 109

**Title :** Winter predation and resource selection by narwhals

**Category :** Ecology

**Student :** Doctoral

**Preferred Format :** Oral Presentation

**Abstract :** Movements and diving behavior of narwhals (*Monodon monoceros*) were examined using satellite-linked time depth recorders deployed on three sub-populations in Canada and West Greenland. Spatial models were used to link satellite telemetry to static and dynamic environmental parameters and elucidate seasonal ecological relationships. Linear mixed effect models, examining time allocation and dive depths during a 5-month winter period, revealed significant differences between whales occupying two distinct wintering grounds in Baffin Bay. Narwhals occupying a northern wintering ground spent most of their time between 200-400 m (25 dives/day, SE 3) and narwhals in a southern wintering ground spent most of their time at depths >800 m (16 dives/day, SE 1). The spatial overlap between narwhal wintering grounds (95% kernel area use) and the abundance and biomass of Greenland halibut (*Reinhardtius hippoglossoides*) suggested lower halibut densities and skewed length frequencies in areas occupied by narwhals. Evidence of heavy predation during the winter period followed well with stomach contents examined from narwhals taken during a winter harvest and predicted prey consumption estimated by a bioenergetic model. Daily geographic locations were linked to spatio-temporal sea ice dynamics, depth, and slope, and movement paths were quantified using the fractal measure of complexity indexing the linearity of movement paths over replicate temporal scales. Strong seasonal habitat selection was apparent and results suggested possible local variation between the wintering grounds. The use of location and diving data collected from satellite telemetry provided sufficient information for a detailed examination of seasonal behavioral changes, resource selection, and effects of predation by separate assemblages of narwhals in the Baffin Bay ecosystem.